UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Northwest Region
7600 Sand Point Way N.E., Bldg. 1
Seattle, WA 98115

Refer to:
OSB1999-0108

June 3, 1999

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Re: ESA Section 7 Consultation for Programmatic Actions in the U.S. Forest Service - Gifford Pinchot National Forest, Mt. Hood National Forest, Columbia River Gorge National Scenic Area, and Salem District Bureau of Land Management that are Likely to Adversely Affect Lower Columbia River steelhead, Lower Columbia River chinook salmon, Upper Willamette River chinook salmon, Columbia River chum salmon, Southwestern Washington/Columbia River cutthroat trout, and Southwest Washington/Lower Columbia River coho salmon

Dear Mr. Stubblefield, Mr. Larsen, Mr. Carroll, and Mr. Manning:

This letter represents the National Marine Fisheries Service's (NMFS) Biological Opinion, pursuant to Section 7(a)(2) of the Endangered Species Act (ESA), that the effects of the programmatic actions in the Gifford Pinchot National Forest, Mt. Hood National Forest, Columbia River Gorge National Scenic Area, and Salem District Bureau of Land Management, together with cumulative effects and the status of the environmental baseline, are not likely to jeopardize the continued existence of certain listed, proposed, and candidate fish species. This letter also authorizes incidental take associated with the programmatic actions. In making these determinations NMFS applies the methodology described in the NMFS document entitled "Application of Endangered Species Act Standards to Lower Columbia River Steelhead", October, 1997 (Attachment 2 of NMFS 1998).

Background

On April 20, 1998, the National Marine Fisheries Service (NMFS) received from the Salem District Manager of Salem Bureau of Land Management (BLM), the Forest Supervisor of the Mt. Hood National Forest (MHNF), and the Area Manager of the Columbia River Gorge National Scenic Area (CRGNSA) a biological assessment (BA) and letter requesting consultation and conference regarding the potential effects of their programmatic activities (road maintenance, aquatic habitat projects, trail maintenance and construction, repair of storm damaged roads, road decommissioning and obliteration, discretionary road use permits, discretionary rights of way, nearstream and instream surveys, environmental education with instream activities, pump chances, water withdrawal permits, public use of developed sites and dispersed public use, developed boat ramps, non-riparian rock quarries, infrastructure maintenance, ski area operations, and recreating on surface waters) on listed, proposed, and candidate Pacific salmonid species. On April 16, 1998, NMFS received a BA and letter requesting consultation and conference regarding the potential effects of the programmatic activities in Washington State on listed and proposed Pacific salmonid species from the Forest Supervisor of the Gifford Pinchot National Forest (GPNF) and the Area Manager of the CRGNSA. A subsequent amendment to the Oregon BA was sent to NMFS on July 22, 1998. Two amendments to the Washington BA were sent to NMFS on May 22 and August 3, 1998. Because the two BAs addressed similar BLM and Forest Service (USFS) activities within the range of a shared salmonid Evolutionarily Significant Unit[1] (ESU) (the Lower Columbia River steelhead ESU), NMFS decided to issue one Biological Opinion (Opinion) for the Mt. Hood and Gifford Pinchot National Forests, the Salem District BLM, and the Columbia River Gorge National Scenic Area. The specific listed and proposed ESUs and candidate species considered in the BA and in this Biological/Conference Opinion are:

ESUs Listed as Threatened:

Lower Columbia River (LCR) steelhead *(Oncorhynchus mykiss)*
Lower Columbia River (LCR) chinook salmon *(Oncorhynchus tshawytscha)*
Upper Willamette River (UWR) chinook salmon *(Oncorhynchus tshawytscha)*
Columbia River (CR) chum salmon *(Oncorhynchus keta)*

ESU Proposed as Threatened:

Southwestern Washington/Columbia River (SW/CR) sea-run cutthroat trout (*O. clarki clarki*)

ESU Candidate Species:

Southwest Washington/Lower Columbia River (SW/LCR) coho salmon *(Oncorhynchus kisutch)*

[1] For the purposes of conservation under the Endangered Species Act, an Evolutionarily Significant Unit (ESU) is a distinct population segment that is substantially reproductively isolated from other conspecific population units and represents an important component in the evolutionary legacy of the species (Waples, 1991).

LCR steelhead were listed as threatened under the ESA on March 19, 1998 (63 FR 13347). Critical habitat for LCR steelhead was proposed on February 5, 1999 (64 FR 5740). LCR and UWR chinook salmon were listed as threatened under the ESA on March 24, 1999 (64 FR 14308). Critical habitat for LCR and UWR chinook salmon was proposed March 9, 1998 (63 FR 11482). CR chum were listed as threatened under the ESA on March 25, 1999 (64 FR 14507). Critical habitat for CR chum was proposed March 10, 1998 (63 FR 11774). SW/CR cutthroat trout were proposed for listing on April 5, 1999 (64 FR16397). Critical habitat has not been designated or proposed for this species. LCR/SW coho salmon remain a candidate species under the ESA (60 FR 38011; July 25, 1995).

This Opinion has been completed pursuant to the ESA and it implementing regulations (50 CFR § 402) and constitutes (1) formal consultation for listed LCR steelhead, LCR chinook salmon, UWR chinook salmon, and CR chum salmon, and (2) formal conference for proposed SW/CR cutthroat trout and candidate SW/LCR coho salmon.

The objective of this Opinion is to determine whether the subject programmatic activities are likely to jeopardize the continued existence of the LCR steelhead, LCR chinook, UWR chinook, CR chum, SW/CR cutthroat trout, and SW/LCR coho salmon ESUs. Critical habitat has not yet been defined for SW/CR cutthroat trout or SW/LCR coho salmon. Therefore, although the consultation evaluates effects of the proposed action on anadromous habitat, conclusions regarding destruction or adverse modification of critical habitat are not included for these two ESUs. However, critical habitat has been proposed for LCR steelhead, LCR chinook, UWR chinook, and CR chum ESUs. For these ESUs, this Opinion also will assess whether the proposed action will result in the destruction or adverse modification of their proposed critical habitat.

The proposed actions comply with the Record of Decision and Standards and Guidelines of the Northwest Forest Plan (USDA-FS & USDI-BLM 1994), the Salem BLM Resource Management Plan, the Mt. Hood National Forest Land and Resource Management Plan, the Columbia River Gorge National Scenic Area Management Plan, and the Gifford Pinchot National Forest Land and Resource Management Plan. These actions are consistent with NMFS' March 19, 1998, Biological Opinion for the Implementation of Land and Resource Management Plans (USFS) and Resource Management Plan (BLM). Hereafter, that programmatic Opinion is referred to as the LRMP/RMP Opinion.

In addition to compliance with ESA regulations, this Opinion has been prepared in accordance with direction established in the May 31, 1995, interagency agreement for Streamlining Consultation Procedures Under Section 7 of the ESA. An interagency consultation process for implementing the streamlining agreement was jointly adopted by the USFS, BLM, USDI Fish and Wildlife Service, and the NMFS on August 29, 1995, and revised and updated on February 26, 1997. In response to the direction to ensure early and frequent interagency coordination throughout the consultation process, two interagency teams (one in Oregon and one in Washington referred to as "Level 1 Teams") with NMFS, USFS, and BLM were formed within the area of the LCR steelhead. Each project (except projects with no effect) is reviewed by the appropriate Level 1 team. The team utilizes the procedures established by NMFS (1996b) to determine the effects of proposed actions relative to the environmental baseline at project and watershed scales, using criteria based on the species' biological requirements. Protective measures in addition to those initially included in the proposed action may be developed during the Level 1 team review. If there is a disagreement between the members that can not be resolved, the issue is then elevated to other hierarchical interagency teams for resolution.

In late 1997 and early 1998, Level 1 team members Jane Banyard, NMFS; Michelle Day, NMFS; Steve Lanigan, GPNF; Richard Larson, CRGNSA; Joe Moreau, MHNF; and Bob Ruediger, Salem District BLM, reviewed the programmatic actions on the action agencies' land within the range of the LCR steelhead ESU. The subject Biological Assessments and supporting information resulted from these meetings.

The BA documents the environmental baseline at the 4th field hydrologic unit code[2] watershed (hereafter referred to as 4th field basin) scale and effects determinations at the project scale. In addition, the BA provides documentation demonstrating that the projects are consistent with the ACS. Because consistency with the ACS is typically analyzed at the 5th field HUC (watershed) scale, the effects determinations were also analyzed at that scale. Baseline descriptions and effects determinations for each programmatic action proposed in the BA were completed by the USFS and BLM. The Level 1 team collaborated on the project scale and 5th field watershed scale determinations.

Proposed Actions

The USFS and BLM requested formal consultation on the following 17 programmatic actions: road maintenance, aquatic habitat projects, trail maintenance and construction, repair of storm damaged roads, road decommissioning and obliteration, discretionary road use permits, discretionary rights of way, nearstream and instream surveys, environmental education with instream activities, pump chances, water withdrawl permits, public use of developed sites and dispersed public use, developed boat ramps, non-riparian rock quarries, infrastructure maintenance, ski area operations, and recreating on surface waters. The ESA implementing regulations define "Effects of the action" as, "...the direct and indirect effects of an action on the species or critical habitat, together with the effects of other activities that are interrelated or interdependent with that action, that will be added to the environmental baseline.... Interrelated actions are those that are part of a larger action and depend on the larger action for their justification. Interdependent actions are those that have no independent utility apart from the action under consideration" (50 CFR §402.02). The programmatic actions of discretionary road use

[2] Stream drainages can be arranged in nested hierarchies, in which a large drainage is composed of smaller drainages. The USFS and BLM use a system in which these drainages are numbered in a cumputer database for analytical purposes. The number identifier of a particular drainage in this database is called its hydrologic unit code, or HUC. This HUC increases with decreasing drainage area, thus a 4th field HUC (such as the Clackamas River basin) is composed of several 5th field HUCs (such as Eagle Creek, Fish Creek, etc., hereafter referred to as a watershed), and so on. The Northwest Forest Plan determined that the scale of watershed analyses should be 20 to 200 square miles, which often corresponds to a 5th field watershed. Fifth-field watersheds are hierarchal subdivisions of western Oregon river subbasins that were cooperatively delineated by the USFS and BLM to facilitate watershed analysis. Fifth-field watersheds (approximately 20-200 square miles in size) provide a proper context for assessing many processes and features affecting ecosystem function. In this consultation, 4th field basins are referred to Section 7 watersheds in the BA.

permits, discretionary rights of way, and water withdrawal permits, often include interrelated or interdependent actions such as non-federal timber harvest or surface water withdrawal that would not occur but for issuance of the federal permit. Without knowing the details of such interrelated and interdependent actions, the NMFS cannot effectively analyze effects of those programmatic actions. Therefore, the NMFS is unable to conclude consultation on the programmatic actions of discretionary road use permits, discretionary rights of way, and water withdrawal permits in this Opinion. This Opinion will conclude formal consultation on the following 14 programmatic actions: road maintenance, aquatic habitat projects, trail maintenance and construction, repair of storm damaged roads, road decommissioning and obliteration, nearstream and instream surveys, environmental education with instream activities, pump chances, public use of developed sites and dispersed public use, developed boat ramps, non-riparian rock quarries, infrastructure maintenance, ski area operations, and recreating on surface waters. Hereafter, all reference to programmatic excludes the categories of discretionary road use permits, discretionary rights of way, and water withdrawal permits.

The BAs submitted to NMFS for the actions covered in this Opinion describe the programmatic actions and their effects on LCR steelhead. Some of the actions in the BAs were determined to “may affect, and likely to adversely affect” (LAA) LCR steelhead, and the others were determined to “may affect, but not likely to adversely affect” (NLAA) this species. The 17 categories of actions that were determined to be LAA are the subject of this Opinion. The NLAA actions were covered in a separate concurrence letter dated August 20, 1998 to Robert W. Williams, Regional Forester, USDA Forest Service, and Elaine Y. Zielinski, State Director - OR/WA, USDI Bureau of Land Management, from William Stelle, Jr., Regional Administrator, NMFS.

The Level 1 team agreed that since the effect determinations at the watershed scale are the same for LCR steelhead as for other proposed or candidate anadromous fish species, the effects determinations for the subject actions of this Opinion, which are LAA for LCR steelhead, are also LAA for LCR chinook, UWR chinook, CR chum, SW/CR cutthroat trout, and SW/LCR coho.

The proposed actions are programmatic, meaning that each category of actions may include a number of individual actions, which, when grouped together, represent a program. Since the individual actions may occur at many individual sites across the landscape (e.g., dispersed public use), on a routine basis (e.g., road maintenance), or sporadically (e.g., requests for road use permits), the interagency team felt that these kinds of actions should be assessed programmatically.

Following are descriptions of each programmatic action.

Road Maintenance

These activities are designed to maintain safety and control, and prevent road erosion. This category includes any road maintenance activities using heavy equipment, e.g. surface maintenance (grading, leveling); drainage maintenance and repair; vegetation management (brushing, limbing, seeding, and mulching); hauling waste or fill for road surfaces or ditches; surface replacement (paving, repaving, chip-sealing, and rocking); small tree or slide removal; snowplowing; dust abatement; and maintenance and repair of structures (relief or channel culverts, bridges). Road maintenance due to storm events such as small slide removal and stabilization or culvert and drainage repair is performed as exigencies arise.

Aquatic Habitat Projects

Aquatic habitat projects are constructed or created within the stream channel or the immediate floodplain to improve aquatic habitat, channel stability, or fish passage, and the maintenance thereof. Projects include the placement of Large Woody Debris (LWD) (whole trees or portions of trees); boulders and gravel into the channel; excavation of side channels and alcoves; and stream bank and channel stabilization. Project access roads are rehabilitated with techniques which include seeding, waterbars, ripping, and blocking. Passage improvements include the replacement of barrier culverts with passable culverts, pipe-arches, or bridges; construction of fish ladders; and placement/construction of sills (boulder, wood, concrete) to improve access to culverts. Work may be accomplished using manual labor, heavy equipment, or helicopters and may involve the use of this equipment in the stream channel. This does not include falling of streamside (within 1 site-potential tree height) trees in riparian reserves into the stream.

Trail Maintenance and Construction

Trails maintenance is implemented to improve safety, prevent erosion and prevent damage to resources. Trail maintenance and reconstruction of existing trails involves actions such as removing leaning and down trees from the trail; diverting erosive water off trails (e.g. waterbars, drain dips, culverts); repair of erosion sites (addition of gravel or logs in wet sites); construction/improvements to stream crossings; brushing; improving the tread; and constructing and maintaining rock crib walls to support unstable trail sections. Trails are constructed in response to recreational use. Trail construction includes new trails and the relocation or extension of existing trails. Heavy equipment is rarely used. This category does not include actions which are not directly related to the repair or construction of trails or trail stream crossings.

Repair of Storm Damaged Roads

These projects are implemented to maintain safety, open access and prevent further damage to resources resulting from storm related damage to roads. Projects involve action such as the removal of large slides; reconstruction, repair, or relocation of roads damaged by surface erosion, high streamflows, fill failure, culvert failure, and landslides; stabilization of slopes; and the repair or replacement of bridges and culverts. Only repair of storm related damage is covered in this category. Work is accomplished using heavy equipment and may occur in the wet season and involve work in the stream channels.

Road Decommissioning and Obliteration

This category includes the removal of those elements of a road that reroute hillslope drainage and present slope stability hazards from unnecessary, unstable or poorly located roads. Also includes dispersed recreational campsite removal. This category includes actions such as bridge and culvert removal; removal of asphalt and gravel; subsoiling of road surfaces; outsloping; waterbarring; fill removal; sidecast pullback; revegeting with native or non-evasive species; and roadway barricading to exclude vehicular traffic.

Nearstream and Instream Surveys

Surveys are conducted to assess stream condition, aquatic invertebrate populations, and plant, wildlife and other resources in adjacent riparian areas. This consists of walking surveys done in and near streams. They consist of aquatic habitat inventory, and botany, mollusk, amphibian, cultural resource (including test pits approximately 1 square meter in size), and riparian vegetation surveys and monitoring. A near stream survey refers to surveys done on stream banks or within 25 feet of stream reaches with proposed or listed fish species. This does not include: electrofishing, snorkeling, spawning surveys, or direct capture (traps, seines, gill nets, etc.).

Environmental Education with Instream Activities

This category entails programs to teach people about the life histories and importance of salmon and other aquatic organisms. It includes programs such as Salmon Watch, which takes classes of school children to look at spawning salmon and to do other activities like collecting macroinvertebrates and measuring water quality in and along the stream.

Pump Chances

This entails maintenance and use of sites for water withdrawal during prescription burns or emergency fire conditions. Access to pump chances is maintained by removing brush from trails to access points, trees from helicopter landing sites, and the installation of boulders (or similar) to increase pool depth. Most pump chances are located on fish bearing streams, although typically water is not withdrawn in a given year. Withdrawals are for fire control and dust abatement.

Public Use of Developed Sites and Dispersed Public Use

Developed recreation sites include campgrounds, day use areas, and interpretive sites. Dispersed public use includes the use of Federal lands for short term camping, fishing, hunting, hiking, boating, wildlife watching, and similar activities other than in developed facilities.

Developed Boat Ramps

This category includes maintenance and use of developed boat ramps for loading and unloading boats by hand or from trailers, associated staging and parking areas, docking facilities, and other developments such as picnic or sanitation facilities. The harvesting of sensitive species is not covered by this category.

Non-Riparian Rock Quarries

Activities in this category provide a source of rock and gravel for use in road construction and maintenance, and for other activities such as restoration projects. Activities include drilling; blasting; crushing; hauling of materials on new or existing roads; and stockpiling material from decommissioned roads.

Infrastructure Maintenance

This is the maintenance of infrastructure improvements in Riparian Reserves for use by the public and for administrative purposes. This includes the maintenance of developments such as campgrounds, interpretive sites, education sites, storage areas, administrative sites, and similar improvements. Maintenance may include activities such as pruning of brush and trees; operation of sewage facilities; maintaining roads and other surfaces; maintaining buildings; and operation of sanitary facilities using hand tools and power equipment.

Ski Area Operations

This category includes parking lot and road sanding, plowing, snowblowing, brushing of runs by mechanical and hand means; building, lift, tow rope and equipment maintenance, and access road and trail maintenance. Each area has an operating plan which includes erosion control and hazardous waste plans. This consultation does not include expansion of infrastructure or salting to maintain snow conditions or Oregon Department of Transportation sanding, plowing, and blowing operations.

Recreating on Surface Waters

The issuance of Special Use Permits allows for white water rafting, kayaking, and canoeing, and to allow access to USFS/BLM lands for this purpose. Outfitters conduct tours on streams during high flows. These activities typically occur during May.

Biological Information and Critical Habitat

LCR steelhead

Available historical and recent LCR steelhead abundance information is summarized in Busby *et al*. (1996). No estimates of historical (pre-1960s) abundance specific to this ESU are available. Because of their limited distribution in upper tributaries and the urbanization surrounding the lower tributaries (e.g., the lower Willamette, Clackamas, and Sandy Rivers run through Portland or its suburbs), summer steelhead appear to be at more risk from habitat degradation than winter steelhead. The lower Willamette, Clackamas, and Sandy steelhead trends are stable or slightly increasing, but this is based on angler surveys for a limited time period, and may not reflect trends in underlying population abundance. Total annual run size data are only available for the Clackamas River (1,300 winter steelhead, 70% hatchery; 3,500 wild summer steelhead).

Biological, life history, and population trends information for LCR steelhead can be found in Busby et al. 1995, Busby et al. 1996, and Attachment 1 of NMFS 1998. Following is a very general life history of LCR steelhead. The LCR steelhead ESU includes both summer and winter run-types. Summer steelhead enter fresh water between May and October. Winter steelhead enter fresh water between November and April. They typically spawn between December and June. Depending on water temperature, steelhead eggs may incubate for 1.5 to 4 months before hatching. Juveniles generally spend 2 years in freshwater before migrating to the ocean where they generally spend 2 more years prior to returning to spawn.

Critical habitat was proposed for the LCR steelhead on February 5, 1999 (64 FR 5740). LCR steelhead proposed critical habitat includes all river reaches accessible to listed steelhead in the Columbia River tributaries between the Cowlitz and Wind Rivers in Washington and the Willamette and Hood Rivers in Oregon, inclusive. Also included are the river reaches and estuarine areas in the Columbia River from the mouth upstream to the Hood River in Oregon. With regard to adjacent riparian zones, NMFS defines steelhead critical habitat based on key riparian functions. Specifically, the adjacent riparian area is defined as the area adjacent to a stream that provides the following functions: shade; sediment, nutrient or chemical regulation; streambank stability; and input of large woody debris or organic matter. The physical and biological features that create properly functioning salmonid habitat vary throughout the range of steelhead and the extent of the adjacent riparian zone may change accordingly, depending on the landscape under consideration.

LCR chinook

This ESU includes all native populations from the mouth of the Columbia River to the crest of the Cascade Range, excluding populations above Willamette Falls. The historic location of Celilo Falls, which corresponds to the edge of the drier Columbia Basin Ecosystem and historically may have presented a migrational barrier to chinook salmon at certain times of the year, is the eastern boundary for this ESU. Not included in this ESU are “stream-type” spring-run chinook salmon found in the

Klickitat River (which are considered part of the Mid-Columbia River Spring-Run ESU) or the introduced Carson spring chinook salmon strain. Spring chinook found in the Clackamas River are not included in this ESU, but are considered part of the UWR chinook ESU. "Tule" fall chinook salmon in the Wind and Little White Salmon Rivers are included in this ESU, but not introduced "upriver bright" fall-chinook salmon populations in the Wind, White Salmon, and Klickitat Rivers. For this ESU, the Cowlitz, Kalama, Lewis, White Salmon, and Klickitat Rivers are the major river systems on the Washington State side, and the Willamette and Sandy Rivers are foremost on the Oregon State side. The majority of this ESU is represented by fall-run fish. There is some discussion among some co-managers as to whether any natural-origin spring chinook salmon persist in this ESU.

Spring-run chinook salmon on the lower Columbia River, like those from coastal stocks, enter freshwater in March and April well in advance of spawning in August and September. Historically, fish migrations were synchronized with periods of high rainfall or snowmelt to provide access to upper reaches of most tributaries where fish would hold until spawning (Fulton 1968, Olsen *et al*. 1992, WDF *et al*. 1993). Dams have reduced or eliminated access to upriver spawning areas on the Cowlitz, Lewis, Clackamas, Sandy, and Big White Salmon Rivers. A distinct winter-spawning run may have existed on the Sandy River (Mattson 1955) but is believed to have been extirpated (Kostow 1995). In any event, all basins are affected (to varying degrees) by habitat degradation. Major habitat problems are related primarily to blockages, forest practices, urbanization in the Portland and Vancouver areas, and agriculture in floodplains and low-gradient tributaries. Also, freshwater habitat is in poor condition in many basins due to problems related to forestry practices, urbanization, and agriculture.

Previous assessments of stocks within this ESU have identified several as being at risk or of concern (Nehlsen *et al*. 1991). About half of the populations comprising this ESU are very small, increasing the likelihood that risks due to genetic and demographic processes in small populations will be important. Numbers of naturally spawning spring-run chinook salmon are very low, and native populations in the Sandy and Clackamas Rivers have been supplanted by spring-run fish from the Upper Willamette River. There have been at least six documented extinctions of populations in this ESU, and it is possible that extirpation of other native populations has occurred but has been masked by the presence of naturally spawning hatchery fish. In addition, the large numbers of hatchery fish in this ESU make it difficult to determine the proportion of naturally-produced fish.

There are no estimates of historic abundance for this ESU, but there is widespread agreement that natural production has been substantially reduced over the last century. Though abundance in this ESU is still relatively high, the majority of the fish appear to be hatchery-produced. Long- and short-term trends in abundance are mostly negative, some severely so. The numbers of naturally-spawning spring runs are very low, in fact, it is highly unlikely that there are any healthy native spring-run populations. The pervasive influence of hatchery fish in almost every river in this ESU and the degradation of freshwater habitat suggests that many naturally-spawning populations are not able to replace themselves.

Recent abundance of spawners includes a 5-year geometric mean natural spawning escapement of 11,200 spring-run fish (1992-96) [BRT-status report]. Table 1 shows some of the estimated returns to the lower Columbia River over the recent years.

Table 1. Estimated Lower Columbia River spring chinook returns, 1992-1997. (Source: ODFW Status Report for Columbia River Fish Runs and Fisheries, 1938-1997.)

Year	Sandy R.	Cowlitz R.	Lewis R.	Kalama R.	Total Returns Excluding the Willamette System
1992	8,600	11,900	6,000	2,700	38,400
1993	6,400	9,900	6,700	3,000	29,500
1994	3,500	3,400	3,000	1,300	14,400
1995	2,500	2,500	3,800	700	9,700
1996	4,100	2,000	1,600	600	9,200
1997	5,200	1,900	1,900	500	11,400

Fall chinook predominate the Lower Columbia River salmon runs. Fall-run fish return to the river in mid-August and spawn within a few weeks (WDF et al. 1993, Kostow 1995). These fall-run chinook salmon are often called "tules" and are distinguished by their dark skin coloration and advanced state of maturation at the time of freshwater entry. Fall-run chinook salmon populations may have historically spawned from the mouth of the Columbia River to the Klickitat River (RKm 290). These fall-run chinook salmon begin the freshwater phase of their return migration in late August and October and the peak spawning interval does not occur until November (WDF et al. 1993).

The majority of fall-run chinook salmon emigrate to the marine environment as subyearlings (Reimers and Loeffel 1967, Howell et al. 1985, WDF et al. 1993). A portion of returning adults whose scales indicate a yearling smolt migration may be the result of extended hatchery-rearing programs rather than of natural, volitional yearling emigration. It is also possible that modifications in the river environment may have altered the duration of freshwater residence. Adults return to tributaries in the lower Columbia River at 3 and 4 years of age for fall-run fish and 4 to 5 years of age for spring-run fish. This may be related to the predominance of yearling smolts among spring-run stocks. Marine coded-wire tag recoveries for lower Columbia River stocks tend to occur off the British Columbia and Washington coasts, though a small proportion of the tags are recovered in Alaskan waters.

There are no reliable estimates of historic abundance for this ESU, but it is generally agreed that there have been vast reductions in natural production over the last century. Recent abundance of spawners includes a 5-year geometric mean natural spawning escapement of 29,000 natural spawners and

37,000 hatchery spawners (1991-95), but according to the accounting of PFMC (1996), approximately 68% of the natural spawners are first-generation hatchery strays.

All basins in the region are affected (to varying degrees) by habitat degradation. Major habitat problems are related primarily to blockages, forest practices, urbanization in the Portland and Vancouver areas, and agriculture in floodplains and near low-gradient tributaries. Substantial chinook salmon spawning habitat has been blocked (or passage substantially impaired) in the Cowlitz (Mayfield Dam 1963, RKm 84), Lewis (Merwin Dam 1931, RKm 31), Clackamas (North Fork Dam 1958, RKm 50), Hood (Powerdale Dam 1929, RKm 7), and Sandy (Marmot Dam 1912, RKm 48; Bull Run River dams in the early 1900s) Rivers (WDF et al. 1993, Kostow 1995).

Hatchery programs to enhance chinook salmon fisheries in the lower Columbia River began in the 1870s, expanded rapidly, and have continued throughout this century. Although the majority of the stocks have come from within this ESU, over 200 million fish from outside the ESU have been released since 1930. A particular concern at the present time is straying by Rogue River fall-run chinook salmon, which are released into the lower Columbia River to augment harvest opportunities. Available evidence indicates a pervasive influence of hatchery fish on natural populations throughout this ESU, including both spring- and fall-run populations (Howell et al. 1985, Marshall et al. 1995). In addition, the exchange of eggs between hatcheries in this ESU has led to the extensive genetic homogenization of hatchery stocks (Utter et al. 1989).

Harvest rates on fall-run stocks are moderately high, with an average total exploitation rate of 65% (1982-89 brood years) (PSC 1994). The average ocean exploitation rate for this period was 46%, while the freshwater harvest rate on the fall run has averaged 20%, ranging from 30% in 1991 to 2.4% in 1994. The average in-river exploitation rate on the stock as a whole is 29% (1991-95).

Long- and short-term trends in abundance of individual populations are mostly negative, some severely so. About half of the populations comprising this ESU are very small, increasing the likelihood that risks due to genetic and demographic processes in small populations will be important. Numbers of naturally spawning spring-run chinook salmon are very low, and native populations in the Sandy and Clackamas Rivers have been supplanted by spring-run fish from the Upper Willamette River. There have been at least six documented extinctions of populations in this ESU, and it is possible that extirpation of other native populations has occurred but has been masked by the presence of naturally spawning hatchery fish.

Critical habitat for LCR chinook salmon was proposed March 9, 1998 (63 FR 11482). Proposed critical habitat is designated to include all river reaches accessible to chinook salmon in Columbia River tributaries between the Grays and White Salmon Rivers in Washington and the Willamette and Hood Rivers in Oregon, inclusive. Also included are river reaches and estuarine areas of the Columbia River from its mouth upstream to the Dalles Dam.

UWR chinook

Chinook populations in the UWR chinook ESU have a life history pattern that includes traits from both ocean- and stream-type life histories. Ocean distribution of chinook in this ESU is consistent with an ocean-type life history, with the majority of chinook being caught off the coasts of British Columbia and Alaska. However, smolt emigrations occur as young of the year and as age-1 fish. Adults return to the Willamette River primarily March through May at ages 3-5. Historically, spawning occurred between mid-July and late October. However, the current spawn timing of hatchery and wild chinook is September and early October due to hatchery fish introgression.

The abundance of naturally-produced spring chinook in the ESU has declined substantially. Historically, the predominant areas producing spring chinook were the Molalla, Santiam, McKenzie, and Middle Fork Willamette river basins, which were thought to produce several hundreds of thousands of spring chinook (Nicholas 1995). Currently, the McKenzie River is the primary natural production area within the ESU. From 1946-50, the geometric mean of Willamette Falls counts for spring chinook was 31,000 fish (Myers *et al*. 1998), which represented primarily naturally-produced fish. The most recent 5 year (1992-96) geometric mean escapement above the falls was 26,000 fish, comprised predominantly of hatchery-produced fish (Table 2). Nicholas (1995) estimated 3,900 natural spawners in 1994 for the ESU, with approximately 1,300 of these spawners being naturally produced. Myers *et al*. (1998) showed strong short-term negative trends (-7% or more) in spring chinook abundance for all natural populations in the ESU where data existed. The long-term trend for total spring chinook abundance within the ESU has been approximately stable. However, the great majority of returning fish to the Willamette River in recent years have been of hatchery-origin. It is questionable whether natural production within the Willamette Basin is self-sustaining, even in the absence of fisheries (Meyers *et al*. 1998).

Habitat loss and degradation has contributed to the decline of spring chinook in the Willamette Basin. Many of the key production areas in the basin have been blocked by the construction of dams. Channelization and the loss of complex side channel and wetland habitat has reduced the amount of rearing habitat in the mainstem Willamette River. Alterations to temperature and flow regimes has resulted in premature emergence of juveniles and lower flows during spring smolt emigrations which results in lower juvenile survival. Large artificial production programs within the basin have likely contributed to the loss of genetic diversity among natural populations from hatchery fish straying into natural production areas. Harvest rates in the past have been 50-70%, which were too high for wild stocks to sustain.

Table 2. Run size of spring chinook at the mouth of the Willamette River and counts at Willamette Falls and Leaburg Dam on the McKenzie River (Nicholas 1995; ODFW and WDFW 1998).

Return Year	Estimated number entering Willamette River	Willamette Falls Count	Leaburg Dam Count (hatchery and wild fish combined, 1985-1995)
1985	57,100	34,533	825
1986	62,500	39,155	2,061
1987	82,900	54,832	3,455
1988	103,900	70,451	6,753
1989	102,000	69,180	3,976
1990	106,300	71,273	7,115
1991	95,200	52,516	4,359
1992	68,000	42,004	3,816
1993	63,900	31,966	3,617
1994	47,200	26,102	1,526
1995	42,600	20,592	1,622
1996	34,600	21,605	1,086 (wild fish only)
1997	35,000	26,885	981 (wild fish only)

Proposed critical habitat is designated to include all river reaches accessible to chinook salmon in the Willamette River and its tributaries above the Willamette Falls. Also included are river reaches and estuarine areas in the Columbia River from its mouth upstream to and including the Willamette River in Oregon.

CR chum

Chum salmon are semelparous; spawn primarily in freshwater; and, apparently, exhibit obligatory anadromy (there are no recorded landlocked or naturalized freshwater populations) (Randall et al. 1987). The species is best known for the enormous canine-like fangs and striking body color of spawning males (a calico pattern, with the anterior two-thirds of the flank marked by a bold, jagged, reddish line and the posterior third by a jagged black line). Females are less flamboyantly colored and lack the extreme dentition of the males.

Chum salmon spend more of their life history in marine waters than other Pacific salmonids. Chum salmon, like pink salmon, usually spawn in coastal areas, and juveniles outmigrate to seawater almost immediately after emerging from the gravel that covers their redds (Salo 1991). This ocean-type migratory behavior contrasts with the stream-type behavior of some other species in the genus Oncorhynchus (e.g., coastal cutthroat trout, steelhead, coho salmon, and most types of chinook and sockeye salmon), which usually migrate to sea at a larger size, after months or years of freshwater rearing. This means that survival and growth in juvenile chum salmon depend less on freshwater conditions (unlike stream-type salmonids which depend heavily on freshwater habitats) than on favorable estuarine conditions. Another behavioral difference between chum salmon and species that rear extensively in freshwater is that chum salmon form schools, presumably to reduce predation (Pitcher 1986), especially if their movements are synchronized to swamp predators (Miller and Brannon 1982).

Historically, chum salmon were distributed throughout the coastal regions of western Canada and the United States, as far south as Monterey Bay, California. Presently, major spawning populations are found only as far south as Tillamook Bay on the northern Oregon coast. Climate and geological features vary markedly in this region, with diverse patterns of vegetation, weather, soils, and water quality.

In both Asia and North America, chum salmon spawn most commonly in the lower reaches of rivers, with redds usually dug in the mainstem or in side channels of rivers from just above tidal influence to nearly 100 km from the sea. In some areas (particularly in Alaska and northern Asia), they typically spawn where upwelled groundwater percolates through the redds (Bakkala 1970, Salo 1991). Some chum salmon even spawn in intertidal zones of streams at low tide, especially in Alaska, where tidal fluctuation is extensive and upwelling of groundwater in intertidal areas may provide preferred spawning sites.

In the Columbia River, chum salmon are limited to tributaries below Bonneville Dam, with the majority of fish spawning on the Washington side of the Columbia River. Chum salmon have been reported in October in the Washougal, Lewis, Kalama, and Cowlitz Rivers in Washington and to the Sandy River in Oregon (Salo 1991). Only three Washington runs (Grays River, Hamilton Creek, and Hardy Creek) were listed in the SASSI report, and all return in about October (the peak is mid-November), a run time similar to that of chum salmon in rivers along the Washington coast (WDF et al. 1993). Grays

River chum salmon enter the Columbia River from mid-October to mid-November, but apparently do not reach the Grays River until late October to early December. These fish spawn from early November to late December. Fish returning to Hamilton and Hardy Creeks begin to appear in the Columbia River earlier than Grays River fish (late September to late October) and have a more protracted spawn timing (mid-November to mid-January). The Oregon Department of Fish and Wildlife (ODFW) cited 25 locations in that state where chum salmon spawn in the lower Columbia River, but run times for these fish are unavailable (Kostow 1995). Chum salmon are known to spawn around the islands immediately below Bonneville Dam.

For chum salmon, quantitative estimates of historical abundance are generally lacking. At best, historical abundance can be inferred from fishery landings data. Fishery landings suggest that chum salmon abundance may be near historical levels in the Puget Sound area, but that natural populations south of the Columbia River (and possibly to the north) are at very low levels relative to historic abundance.

The past destruction, modification, and curtailment of freshwater habitat for steelhead was reviewed in the "Factors for Decline" document (NMFS 1996a) published as a supplement to the notice of determination for West Coast Steelhead under the ESA. Although chum salmon, in general, spawn lower in river systems than do steelhead and primarily rear in estuarine areas, this document still serves as a catalog of past habitat modification within the range of chum salmon. Among habitat losses documented by NMFS (1996a), those with the most impact on chum salmon include water withdrawal, conveyance, storage, and flood control (resulting in insufficient flows, stranding, juvenile entrainment, and instream temperature increases); logging and agriculture (loss of LWD, sedimentation, loss of riparian vegetation, habitat simplification); mining (especially gravel removal, dredging, pollution); and urbanization (stream channelization, increased runoff, pollution, habitat simplification). Hydropower development was considered a major factor in habitat loss for steelhead (NMFS 1996a), but is probably less significant for chum salmon (due to chum salmon's use of lower river areas for spawning) although many spill dams and other small hydropower facilities were constructed in lower river areas. Lichatowich (1989) also identified habitat loss as a significant contributor to the decline of Pacific salmon in Oregon's coastal streams.

Other risk factors typically considered for salmonid populations include disease prevalence, predation, and changes in life-history characteristics such as spawning age or size. With the exception of a general decline in body size of spawners, there is no clear evidence for effects of such risk factors for chum salmon in Washington and Oregon, though other factors may be important for individual populations.

The Columbia River historically contained large runs of chum salmon that supported a substantial commercial fishery in the first half of this century. These landings represented a harvest of more than 500,000 chum salmon in some years. There are presently neither recreational nor directed commercial fisheries for chum salmon in the Columbia River, although some chum salmon are taken incidentally in the gill-net fisheries for coho and chinook salmon, and there has been minor recreational harvest in some tributaries (WDF et al. 1993). Hymer (1993, 1994) and WDF et al. (1993) monitored returns of chum salmon to three streams in the Columbia River and suggested that there may be a few thousand, perhaps up to 10,000, chum salmon spawning annually in the Columbia River basin. Kostow (1995) identified 23 spawning populations on the Oregon side of the Columbia River but provided no estimates of the number of spawners in these populations.

An estimate of the minimal run size for chum salmon returning to both the Oregon and Washington sides of the Columbia River has been calculated by summing harvest, spawner surveys, Bonneville Dam counts, and returns to the Sea Resources Hatchery on the Chinook River in Washington (ODFW and WDFW 1995). This suggests that the chum salmon run size in the Columbia River has been relatively stable since the run collapsed in the mid-1950s. The minimal run size in 1995 was 1,500 adult fish.

The BRT concluded that the Columbia River ESU is presently at significant risk, but team members were divided in their opinions of the severity of that risk. Historically, the Columbia River contained chum salmon populations that supported annual harvests of hundreds of thousands of fish. Current abundance is probably less than 1% of historic levels, and the ESU has undoubtedly lost some (perhaps much) of its original genetic diversity. Presently, only three chum salmon populations, all relatively small and all in Washington, are recognized and monitored in the Columbia River (Grays River, Hardy and Hamilton Creeks). Each of these populations may have been influenced by hatchery programs and/or introduced stocks, but information on hatchery-wild interactions is unavailable.

Because of the well-known aversion of chum salmon to surmounting in-river obstacles to migration, the effects of the mainstem Columbia River hydropower system have probably been more severe for chum salmon than for other salmon species. Bonneville Dam presumably continues to impede recovery of upriver populations. Substantial habitat loss in the Columbia River estuary and associated areas presumably was an important factor in the decline and also represents a significant continuing risk for this ESU. Although current abundance is only a small fraction of historical levels, and much of the original inter-populational diversity has presumably been lost, the total spawning run of chum salmon to the Columbia River has been relatively stable since the mid 1950s, and total natural escapement for the ESU is probably at least several thousand fish per year.

Critical habitat for CR chum was proposed March 10, 1998 (63 FR 11774). Proposed critical habitat for CR chum encompasses accessible reaches of the Columbia River (including estuarine areas and tributaries) downstream from Bonneville Dam, excluding Oregon tributaries upstream of Milton Creek at river km 144 near the town of St. Helens.

SW/CR cutthroat trout

Biological information and historical population trends can be found in Johnson et al. 1997 and Trotter 1989.

SW/LCR coho salmon

Biological information and historical population trends can be found in Weitkamp et al. 1995.

Evaluating Proposed Actions

The standards for determining jeopardy are set forth in Section 7(a)(2) of the ESA as defined by its implementing regulations (50 CFR § Part 402). When the NMFS issues a conference or biological opinion, it uses the best scientific and commercial data available to separately determine whether a proposed Federal action is likely to: (1) jeopardize the continued existence of a proposed, listed, or candidate species, and/or (2) destroy or adversely modify a proposed or listed species' critical habitat. NMFS discusses the analysis necessary for application of these standards in the particular contexts of the Pacific salmonids in Attachment 2 (Application of Endangered Species Act Standards to Lower Columbia River Steelhead) in the March 19, 1998, LRMP/RMP Opinion. This analysis involves the following steps: (A) define the biological requirements of the species; (B) evaluate the environmental baseline relative to the species' current status; (C) determine the effects of the proposed or continuing action on the species; (D) determine whether the species can be expected to survive with an adequate potential for recovery under the effects of the proposed or continuing action, the environmental baseline and any cumulative effects, and considering measures for survival and recovery specific to other life stages; and (E) identify reasonable and prudent alternatives to a proposed or continuing action that is likely to jeopardize the continued existence of the species.

A. Biological Requirements

The first step in the method the NMFS uses in applying the ESA standards of Section 7(a)(2) to Pacific salmonids is to define the species' biological requirements that are most relevant to each consultation. The NMFS finds that these biological requirements are best expressed in terms of environmental factors that define properly functioning freshwater aquatic habitat necessary for the survival and recovery of the listed species. Individual environmental factors include water quality, habitat access, physical habitat elements, river channel condition, and hydrology. These are measurable variables, with properly functioning values determined by the best available information as those necessary for sufficient prespawning survival and distribution, spawning success, egg-to-smolt survival, smolt emigration survival and timing, and smolt condition to allow the long-term survival of the species. Properly functioning watersheds, where all of the individual factors operate together to provide healthy aquatic ecosystems, are necessary for the survival and recovery of these species. This information is discussed further in Attachment 1 (Lower Columbia River Steelhead - Biological Requirements and Status under the 1996 Environmental Baseline) of the March 19, 1998, Biological Opinion on implementation of Land and Resource Management Plans (USFS) and Resource Management Plan (BLM).

The programmatic actions covered in this Opinion cover ten 4th field watersheds within the range of the LCR steelhead ESU. Due to the large scale of the action area for these programmatic actions, individual 4th and 5th field watersheds will have varying levels of importance towards meeting the biological requirements of the ESU in terms of properly functioning freshwater habitat parameters. Overall, the actions addressed in this Opinion are considered to have only minor effects, if any, to habitat parameters. It has been determined that when effects occur they will only be short-term and will not degrade the baseline conditions. Level 1 teams' annual review and tracking of projects implemented under this Opinion will assure that this assumption is reevaluated.

B. Environmental Baseline

The environmental baseline is an analysis of the effects of past and ongoing human and natural factors leading to the current status of the species or its habitat and ecosystem within the action area (NMFS and USFWS 1996). The action area covered by this Opinion includes the Gifford Pinchot and Mt. Hood National Forests, the Columbia River Gorge National Scenic Area, and the Salem BLM District within the LCR steelhead ESU. There are ten 4th field watersheds within the range of the LCR steelhead ESU (Scappoose/Multnomah Channel, Clackamas River, Sandy River, Hood River, Wind/White Salmon, Washougal, Lewis, Kalama, Upper Cowlitz and Lower Cowlitz Rivers). Due to the programmatic nature of this consultation, the Level 1 team decided to assess the environmental baseline for the proposed projects at the 4th field level, using the methodology described by NMFS (1996). The Level 1 team combined the available assessments of the baseline conditions of the associated 5th or 6th field sub-watersheds to arrive at the baseline condition of each 4th field watershed. Due to the nature of combining 5th and 6th field checklist tables, individual sub-watershed check marks may be in all three categories of "properly functioning", "at risk" and "not properly functioning" for a given habitat indicator. Therefore, the discussions of baseline conditions for each 4th field watershed contained in this section are necessarily generalized. Refer to the summary tables in the BA for a more accurate depiction. In addition, the amendment to the Washington BA dated August 3, 1998 provides documentation of the information sources used to determine the environmental baseline along with a narrative description of baseline conditions for each habitat indicator by 5th field watershed for the Gifford Pinchot NF. These analyses are incorporated herein by this reference.

The general environmental baseline affecting Pacific salmonids has been described in various documents. The report of the Forest Ecosystem Management Assessment Team (FEMAT 1993) provides a regional assessment of aquatic ecosystems within the range of the northern spotted owl (including the range of LCR steelhead), particularly with regard to land management actions. Chapter V of FEMAT (1993) focuses on current aquatic habitat conditions and the effects of degraded habitat on fish populations. Page V-2 notes that "[a]quatic ecosystems in the range of the northern spotted owl exhibit signs of degradation and ecological stress." Many factors such as dams, overharvest, excessive predation, disease, artificial propagation, poor ocean conditions, and the destruction and alteration of habitat have been implicated in the decline of Pacific salmonids. Aquatic habitat degradation has resulted from a wide range of land- and water-use practices including timber harvest, road construction, mining, grazing, agriculture, construction and operation of dams, irrigation, and flood control (Busby *et al.* 1996; Spence *et al.* 1996). These activities occur on USFS and BLM lands within the LCR steelhead ESU.

In general, these activities have: (1) reduced connectivity between streams, riparian areas, floodplains, and uplands; (2) significantly increased sediment yields, leading to pool filling and reduction in spawning and rearing habitat; (3) reduced or eliminated instream replenishment of LWD which serves to trap sediment, stabilize stream banks, form pools, and provide cover; (4) reduced or eliminated vegetative canopy that minimizes stream temperature fluctuations; (5) reduced stream complexity by causing streams to become straighter, wider, and shallower which reduces spawning and rearing habitat and increases temperature fluctuations; (6) altered peak flow volume and timing; (7) altered water tables and base flow; and (8) contributed to degraded water quality by adding toxicants through mining and pest control (FEMAT 1993; Rhodes *et al.* 1994; Spence *et al.* 1996).

For example, watershed analyses for the East Fork Hood River and Middle Fork Hood River on the east side of the Mt. Hood NF in Oregon reveal that the average road density (miles of road per square mile of area) for both watersheds is 2.2 miles per square mile. Road densities in subwatersheds of these systems range from 0.01 to 4.9 miles per square mile. Roads and timber harvest in tributary drainages have led to localized sedimentation and habitat simplification. Stream crossings with culverts may be passage barriers at several locations. Timber harvest and associated road building up to the early 1980's impacted riparian areas and in some cases included salvage of instream LWD. This has resulted in an increase of peak flows and a reduction in habitat complexity (USDA-FS 1996a). The West Fork Hood River is considered a stronghold area for LCR steelhead (Joe Moreau, USFS, pers. comm.).

Derived from the four 5th or 6th field assessments, the following is a rough generalization of the description of the Hood River 4th field environmental baseline. Temperature, sediment, chemical contaminant/nutrients, substrate, off-channel habitat, peak/base flows, and disturbance history had the most checks in the properly functioning category. Physical barriers, LWD, pool quality, refugia, width/depth ratio, streambank condition, floodplain connectivity, road density & location, and riparian reserves had a majority of their checkmarks in the at risk category. All four of the checkmarks were in the not properly functioning category for pool frequency. No data was available for drainage network increase.

The major river systems draining the west side of the Mt. Hood NF are the Sandy and Clackamas Rivers. Both of these watersheds support LCR steelhead. The mainstem Sandy River, which drains into the Columbia River at the west end of the Columbia Gorge at Troutdale, Oregon, contains one dam (Marmot Dam) that LCR steelhead must negotiate to access spawning and rearing habitat in the upper reaches of the basin. The Salmon River and Still Creek are tributaries to the upper Sandy River and are considered to be a stronghold for LCR steelhead. The Bull Run and Little Sandy Rivers contribute high quality water to the lower Sandy River basin. Both of these watersheds contain dams that block access to roughly 32.5 miles of historical anadromous fish habitat (USDA-FS 1997).

The following is a rough generalization of the description of the Sandy River 4th field environmental baseline. Chemical contaminant/nutrients and substrate had the most checkmarks in the properly functioning category. Streambank condition had the majority of the check marks split between properly functioning and at risk. Temperature, sediment, LWD, pool quality, off-channel habitat, floodplain connectivity, drainage network increase, road density & location, and riparian reserves had the highest number of check marks in the at risk category. Refugia and peak/base flows had the majority of the check marks split between at risk and not properly functioning. The majority of the check marks were in the not properly functioning category for physical barriers, pool frequency, width/depth ratio, and disturbance history.

The Clackamas River drains into the Willamette River below Willamette Falls near Oregon City, Oregon. Three hydroelectric projects are operated on the lower portion of the mainstem downstream of the National forest boundary. About 70 percent of the watershed is managed by the Mt. Hood National Forest and 2 percent by the Salem District BLM. Approximately 26 percent of the watershed is under private ownership. The remaining 2 percent is owned by the Confederated Tribes of the Warm Springs Indian Reservation with a very small portion (<0.1 percent) managed by the state of Oregon (ODFW 1992). ODFW (1992) reports that clear cutting, removal of LWD from stream channels, removal of streamside vegetation, and road building have created the greatest impacts in the upper portion of the watershed. The average forest road density for the Clackamas River watershed is 2.8 miles per square mile with Fish Creek being 3.1 (USDA-FS 1994; 1995a; 1995b). Fish Creek and the Collawash River, tributaries to the upper Clackamas River, are considered stronghold areas for LCR steelhead. Fish Creek produces roughly 20 percent of LCR steelhead smolts in the Clackamas watershed (Joe Moreau, USFS, pers. comm.).

The following is a rough generalization of the description of the Clackamas River 4th field environmental baseline. Temperature and off-channel habitat had almost an even number of check marks in properly functioning, at risk, and not properly functioning categories. Chemical contaminant/nutrients, physical barriers, substrate, refugia, and streambank condition had the highest number of check marks in the properly functioning category. Pool quality had equal numbers of check marks in both the properly functioning category and the at risk category. Floodplain connectivity, peak/base flows, drainage network increase, and riparian reserves had a majority of the check marks in the at risk category. Split between the at risk and not properly functioning categories were sediment, width/depth ratio, and disturbance history. LWD, pool frequency, and road density & location had a majority of the check marks in the not properly functioning category.

There was only one analysis of the Scappoose/Multnomah channel environmental baseline (it was of Scappoose Creek). Chemical contaminants were identified as properly functioning. Pool frequency, pool quality, streambank condition, peak/base flows, and drainage network increase were at risk. Temperature, sediment, physical barriers, substrate, LWD, off-channel habitat, refugia, width/depth ration, floodplain connectivity, road density & location, disturbance history, and riparian reserves were identified as not properly functioning.

On lands located within the Gifford Pinchot National Forest in State of Washington, there have been similar impacts from clear cutting, removal of LWD from stream channels, removal of streamside vegetation, and road building. Over the past 40 years a large portion of logging in the Wind River drainage, a tier 1 key watershed that supports LCR steelhead, has occurred in riparian areas. The average road density is 2.6 miles per square mile with subwatershed densities ranging from 0.5 to 4.0 miles per square mile (USDA-FS 1996b). USDA-FS (1996b) found that 15 of 26 (58 percent) sixth field watersheds[3]had riparian zones in a greater than 20 percent early-successional stage. Under this condition, increased summer water temperatures are likely occurring due to insufficient stream cover. This same analysis also showed that 27 percent (7 of 26) of these watersheds lack a sufficient number of large trees to support large wood recruitment. Trout Creek, for example, while making up just six percent of the Wind River watershed area, historically supported 50 percent of the steelhead. Trout Creek currently lacks both sufficient stream cover and large wood recruitment potential and steelhead production, versus the mainstem Wind River, has significantly dropped.

The Wind/White Salmon River watershed is an important watershed for LCR summer and winter steelhead. Trout Creek and Panther Creek, both tributaries to the Wind River, and the upper Wind River are historically important spawning areas. Shipard Falls, near the mouth of the Wind River, was once an upstream passage barrier to all anadromous fish except steelhead. A fish ladder was installed in the early 1950s to open the upper waters for a hatchery population of chinook salmon. There is no anadromous habitat in the Rock/Dog Creek 5th field watershed on the GPNF. The Little White Salmon and White Salmon 5th field watersheds are both in the Middle Columbia River steelhead ESU. Both watersheds have impassible blockages below the GPNF boundary, a waterfall and Condit Dam, respectively.

The Wind River portion of the Wind/White Salmon 4th field watershed environmental baseline was categorized as properly functioning for chemical contaminants/nutrients and physical barriers. It is at risk for water quality related to sediment, substrate, pool quality, off-channel habitat, refugia, width/depth ratio, streambank condition, floodplain connectivity, peak/base flows and road density and location. This watershed is not properly functioning with regard to water temperatures, LWD, pool frequency, drainage network, disturbance history and riparian reserves. Depressed populations of fall chinook (both upriver brights and tule) are found in the lower Wind River. Historically, fall chinook did not go above Shipard Falls, but the fish ladder now allows passage. The population of fall chinook is believed to spawn mostly below the Forest boundary (RM 15- 25), although it's possible some fish go onto Forest lands. The population of spring chinook present in the Wind River is derived from hatchery stock. It is maintained through production at the Carson National Fish Hatchery (RM 18) and some natural production in the lower river (RM 15 - 25).

[3] A sixth field watershed may include portions of the same stream. The Wind River, for example, consists of four, sixth field codes, i.e., head waters, upper, middle, and lower Wind River.

Hydroelectric dams on the Cowlitz River and mainstem Lewis River currently block LCR steelhead that occur in these systems from accessing spawning and rearing habitat on the Gifford Pinchot NF. The State of Washington is in the process of reintroducing anadromous fish, including LCR steelhead, and chinook, above hydroelectric facilities on the Cowlitz River. Fall chinook spawn in the Green River and South Fork Toutle River (a tributary of the Lower Cowlitz) several miles below the Forest boundary. Coho salmon also spawn in the lower river, primarily below the confluence of the Green River. Both fishes distribution was more widespread before the eruption of Mount St Helens in 1980, which severely altered spawning habitats, but it is unlikely either fall chinook or coho salmon reached Forest lands.

The Lower Cowlitz 4th field watershed is composed of data from three 5th or 6th field sub-watersheds. The Lower Cowlitz River watershed is generally categorized as properly functioning for chemical contaminants/nutrients, physical barriers and floodplain connectivity. It is generally at risk with regard to stream width/depth ratios. This watershed is generally considered to be not properly functioning the vast majority of habitat indicators, including water quality related to temperature and sediment, LWD, pool frequency, pool quality, off-channel habitat, refugia, peak/base flows, drainage network, road density and location, disturbance history and riparian reserves. Streambank condition and substrate varied across all three categories in equal proportions.

The Upper Cowlitz 4th field watershed is composed of data from six 5th or 6th field sub-watersheds. The Upper Cowlitz River watershed is categorized as properly functioning for chemical contaminants/nutrients and physical barriers in all sub-watersheds. It is generally at risk with regard to substrate, LWD, pool quality, streambank condition, peak/base flows and drainage network. This watershed is generally considered to be not properly functioning for pool frequency, and road density and location. Categorizations of refugia and water quality related to stream temperature and sediment were approximately equally divided among at risk and properly functioning conditions. Off-channel habitat, width/depth ratio, disturbance history and riparian reserves were approximately equally divided among at risk and not properly functioning conditions. Conditions related to floodplain connectivity varied across all three categories in equal proportions.

The Lewis River 4th field watershed has steelhead only in the East Fork Lewis 5th field watershed. Both summer and winter steelhead are found throughout the East Fork Lewis drainage. The majority of spawning habitat is believed to occur below the GPNF boundary. Three sets of dams block upstream passage of steelhead to the mainstem Lewis on GPNF lands. All three dams are going through relicensing. It is not known at this time if steelhead passage around the dams will be a condition of the new license(s). A native stock of fall chinook spawns in the Lewis River, more than 15 miles downstream from the Forest boundary. Spring chinook are historically native to the Lewis River, but are now primarily found below Merwin Dam. Spring chinook natural spawners are now a mixed stock of composite productions. Only occasional hatchery releases have been made into the East Fork Lewis River. A population of early stock coho spawns in the East Fork Lewis River, below the Forest boundary. They are managed on a hatchery stock basis.

The environmental baseline for Lewis River 4th field watershed is composed of data from five 5th or 6th field sub-watersheds. The Lewis River watershed is categorized as properly functioning for chemical contaminants/nutrients, off-channel habitat and refugia. It is generally at risk for water quality related to temperature and sediment, physical barriers, substrate, pool quality, floodplain connectivity, peak/base flows, drainage network, and road density and location. This watershed is generally considered not properly functioning for LWD, pool frequency, disturbance history and riparian reserves. Width/depth ratio was evenly divided among the at risk or not properly functioning categories, and streambank conditions were described in all three categories for various sub-watersheds.

The 4th field Kalama watershed has no anadromous habitat on the Forest. Steelhead occur in the Kalama River up to a waterfall (fish passage barrier) located about 3 miles below the Forest boundary. Fall chinook salmon spawners are a mixed stock of composite production. This stock is designated on the basis of geographic distribution, occurring in the lower 10 miles of the river. Spring chinook salmon in the Kalama are an introduced stock and are managed as a hatchery stock. They occur primarily in the lower section of river (RM 10.5 - 36.8). Kalama River natural spawners are a mixed stock of composite production. They occur throughout the watershed (below the aforementioned falls). The Kalama River provides high quality spring fed water, which originates on Forest land.

The Kalama River watershed is categorized as properly functioning for chemical contaminants/nutrients, off-channel habitat and refugia. It is considered at risk for water quality related to temperature and sediment, physical barriers, substrate, pool quality, floodplain connectivity and peak/base flows. This watershed is not properly functioning for LWD, pool frequency, width/depth ratio, streambank condition, drainage network, road density and location, disturbance history and riparian reserves.

The Washougal River 4th field watershed has no anadromous habitat on the GPNF. The small portion of the watershed occurring on the GPNF consists of non-fishbearing headwater streams. Steelhead do occur in the Washougal River downstream of the GPNF boundary.

The Washougal River watershed is considered to be properly functioning for all water quality indicators, physical barriers, substrate, off-channel habitat, refugia, width/depth ratio, streambank condition, disturbance history and riparian reserves. It is at risk for LWD, pool quality, floodplain connectivity, peak/base flows, drainage network and road density and location. This watershed is considered not properly functioning for pool frequency.

In summary, the principle ways in which pre-Northwest Forest Plan land management practices have contributed to the decline of salmon habitat include: (1) overemphasis on production of non-fishery commodities resulting in losses of riparian and fish habitat; (2) failure to take a biologically conservative or risk-averse approach to planning land management actions when inadequate information exists about the relationship between land management actions and fish habitat; (3) planning land management activities on a site-specific basis rather than on a broader, watershed scale; and (4) reductions in the number, size, and distribution of remaining high-quality habitat areas (such as roadless and minimally developed areas) that serve as biological refugia for anadromous fish subpopulations (FEMAT 1993; Rhodes *et al.* 1994).

Analysis of Effects

The BA and supporting information documents compliance for each of the programmatic actions with the following critical components of the Northwest Forest Plan: standards and guidelines, watershed analysis, watershed restoration, land allocations, and the ACS objectives. The Level 1 teams reviewed the categories of programmatic actions included in the BA and confirmed that they were consistent with the ACS. This is documented for each of the proposed actions that are the subject of this Opinion in two amendments to the BAs. The amendment dated July 17, 1998 addresses consistency with ACS objectives for on-going activities on USFS and BLM lands within the range of the LCR steelhead ESU in Oregon. The amendment dated August 3, 1998 provides the same information for USFS activities on lands within the range of this ESU in Washington. Additionally, the Level 1 teams found that the subject actions are consistent with the terms and conditions of the LRMP/RMP Opinion (NMFS, 1998).

A. Effects of Proposed Action

Individual, and groups of, actions (programs or projects) implemented in accordance with management direction in the land and resource management plans and resource management plans are expected to affect LCR steelhead in a variety of ways. Some may result in adverse effects to salmonid habitat, while others are expected to maintain or restore habitat conditions. Because all actions will be designed and mitigated in accordance with the Aquatic Conservation Strategy objectives, land allocations, and standards and guidelines, any associated adverse effects (e.g., increased habitat sedimentation) are expected to be generally minor in magnitude and short-lived in duration. Chapter V of FEMAT (1993) discusses generally the potential adverse effects of these actions on fish habitat and populations.

The site- and watershed-scale environmental baseline and expected effects associated with individual or groups of projects were evaluated via use of the procedures outlined in the document "Making ESA Determinations of Effect for Individual or Grouped Actions at the Watershed Scale" (NMFS 1996b; Attachment 3 [Making Endangered Species Act Determinations of Effect for Individual or Grouped Actions at the Watershed Scale] in the March 19, 1998 LRMP/RMP Opinion). These evaluation methods were designed to ensure that Level 1 teams can efficiently provide adequate information in BAs to evaluate effects of actions subject to ESA Section 7 conferences and consultations. Effects of actions are expressed in terms of the expected effect (i.e., restore, maintain, or degrade proper functioning) on each of 17 aquatic habitat factors in the project area (site and watershed scales), as described in the "Checklist for documenting environmental baseline and effects of the action" (Checklist) completed for each action.

The evaluation procedures described in NMFS (1996b) are based on a "Matrix of Pathways and Indicators" (Matrix), a holistic method for characterizing environmental baseline conditions and predicting the effects of human activities on those baseline conditions. The Matrix provides generalized ranges of functional values (i.e., properly functioning, at risk, and not properly functioning) for aquatic, riparian, and watershed parameters. The NMFS acknowledges that generalized values provided in the Matrix may not be appropriate for all watersheds within the range of Pacific salmonids or even within the range of a single ESU. Therefore, NMFS encourages development of more biologically-appropriate matrices (referred to as "modified" matrices) in specific physiographic areas. The NMFS, in conjunction with the USFS and the BLM, is in the process of appropriately modifying the Matrix for watersheds that support LCR steelhead. Meanwhile, the generalized values are being utilized for ESA purposes.

Following is a discussion of the potential effects of the subject programmatic activities on Pacific salmonids and their habitat. Effect determinations were assigned to the programmatic categories based on the potential for actions within the category to affect LCR steelhead or streams or stream reaches with LCR steelhead. All of the individual actions do not necessarily have the same effect as the more general programmatic category. Where or when a particular action occurs may determine whether that particular action is given an effect determination of "no effect," "may affect, not likely to adversely affect" (NLAA), or "may affect, likely to adversely affect" (LAA).

The Level 1 team determined that the effects of the programmatic actions would be the same in each of the 4th field watersheds within the range of the LCR steelhead ESU. Therefore, individual checklists for each action, in each watershed, were not prepared. Rather, one checklist, with the environmental baseline only, was prepared for each 4th field watershed, and one checklist with only the program effects was prepared for each programmatic action (these checklists and supporting information are located in the subject BA).

Since the effects of the actions were assessed at the watershed scale, the interagency team assigned what they felt were conservative effect determinations. Most of these actions are considered to have only minor effects on LCR steelhead or their habitat. These effects are generally from the potential for minor amounts of sediment to reach streams, loss of LWD, disturbance to riparian vegetation, and/or minor disturbance to eggs, juvenile, or adult fish. The Level 1 team identified project design criteria for each category of proposed action in the BA in order to minimize or avoid any potential adverse impacts associated with these activities. Some individual actions covered in a programmatic category may have negligible, beneficial, or no effect on LCR steelhead.

Individual actions will be analyzed to determine if they fit under one of the programmatic categories covered in this Opinion. If so, the action agency will determine if the programmatic effect determination is correct for the individual action. Project files shall document that the project is covered by this programmatic Opinion and the effect determination. If the effect determination is the same as the programmatic effect determination or less impacting (e.g., programmatic effect determination is LAA, and the individual action is NLAA), no additional consultation is necessary. If the effect determination is greater than the programmatic effect determination (e.g., programmatic effect determination is NLAA, and individual action is LAA), a separate consultation is required. All projects covered by this

Opinion will be documented on a report form that covers all the items on ATTACHMENT 1 and will be organized by 5th field watersheds. The Level 1 teams (an Oregon team and a Washington team) will meet as needed to review the reports. If during the review, it is decided that impacts are greater than anticipated, this consultation will be reinitiated to address the impacts (e.g., require Level 1 team review of all actions prior to implementation or addition of more terms and conditions).

Any adverse impacts from the proposed programmatic actions are expected to be of limited extent and duration. The NMFS finds that temporary adverse effects to Pacific salmonids and their habitat may occur with the proposed programmatic actions. The spatial and temporal extent of potential adverse effects which may lead to incidental take is described for each project in the BA. However, in each case, these adverse impacts will not retard nor prevent attainment of properly functioning habitat indicators important to Pacific salmonids at the project scale.

Taking a conservative approach, the following group of actions were determined to "Likely to Adversely Affect." Largely, however, the work will not result in adverse effects. Where they do occur, adverse effects are expected to be limited in time, duration and scope, and are expected to be non-significant to the 5th field watersheds in which they occur. Programs under this category are: road maintenance, aquatic habitat projects, trail maintenance and construction, repair of storm damaged roads, road decommissioning and obliteration, nearstream and instream surveys, environmental education (includes instream activities), pump chances, public use of developed sites and dispersed public use, developed boat ramps, non-riparian rock quarries, infrastructure maintenance, ski area operation, and recreating on surface waters.

Road Maintenance

Road maintenance activities have the potential to deliver sediment into channels, create turbidity, reduce LWD potential, and degrade the stream influence zone (one site potential tree). Beneficial effects occur where maintenance reduces potential for catastrophic erosion and sediment delivery to stream channels.

These actions may cause a short-term degradation of water quality and habitat substrate due to sediment inputs, and the removal of LWD. There is also the potential for these actions to have a short-term adverse effect on the drainage network. Road maintenance activities will tend to restore substrate habitat conditions by reducing long-term sediment inputs and can potentially restore habitat access by correction of physical barriers associated with roads.

Aquatic Habitat Projects

Since these involve work in the stream, these projects have the potential to deliver sediment, create turbidity, have fuel/oil spills, cause streambank erosion, disturb the stream influence zone, disturb fish, and cause incidental mortality (e.g., accidental squishing of a fish during placement of a log). These projects are expected to provide ecological benefits, such as improved spawning and rearing habitat, while recovery of natural processes occur.

These actions may cause a short-term degradation of water quality due to sediment inputs and chemical contamination. Streambank condition and habitat substrate may also be adversely affected in the short-term. Aquatic habitat projects will tend to restore habitat conditions by improving water temperature, habitat substrate, LWD, pool frequency and quality, off-channel habitat, refugia, width/depth ratio of the stream, streambank condition and floodplain connectivity in the long-term. There is also a potential for these actions to restore habitat access by correcting fish barriers.

<u>Trail Maintenance and Construction</u>
Trail maintenance and construction have the potential for sediment delivery to streams, turbidity, disturbance at stream crossings or when trails are near streams, and chemical contamination. Beneficial effects occur where maintenance reduces potential adverse impacts to stream channels (e.g., lessons streambank erosion).

These actions may cause a short-term degradation of water quality and habitat substrate due to sediment inputs and chemical contamination. They also have the potential to adversely affect LWD and riparian reserves. Trail maintenance activities will tend to restore habitat substrate conditions in the long-term by reducing sediment inputs, and may potentially restore streambank conditions.

<u>Repair of Storm Damaged Roads</u>
These actions may cause a short-term degradation of water quality and habitat substrate due to sediment inputs. There is also the potential for an adverse effect on LWD. In the long-term, repairing damaged roads will restore water quality and habitat substrate by the reducing the risk of large sediment inputs, and may potentially improve habitat access by correcting fish passage barriers.

<u>Road Decommissioning and Obliteration</u>
These activities may cause a short-term degradation of water quality and habitat substrate due to sediment inputs. In the long-term, these projects will tend to restore habitat substrate by reducing the risk of sediment delivery to streams and restore fish passage by correcting fish barriers caused by roads. Road decommissioning projects will also tend to restore hydrology by reducing peak flows and reducing the drainage network. Watershed conditions will also be improved as road densities are reduced and riparian reserves are restored. These projects may also potentially improve floodplain connectivity.

<u>Nearstream and Instream Surveys</u>
Disturbance of fish or crushing of eggs could occur during these activities. These activities will maintain current habitat conditions for all habitat indicators.

<u>Environmental Education with Instream Activities</u>
Environmental education can result in trampling of riparian areas and/or disturbance of spawning fish. These activities will maintain all the habitat indicators, with a potential for degradation of the riparian reserves.

Pump Chances

Use of pump chances lend the possibility for disturbance, entrainment, and loss of fish. These activities will maintain current habitat conditions for all habitat indicators.

Public Use of Developed Sites and Dispersed Public Use

Public use can result in the alteration of habitat, disturbance of fish, and degradation of water quality. These activities may degrade riparian reserves. They also have the potential to degrade water quality due to short-term sediment inputs and/or chemical contamination. There is also the potential for degradation of habitat substrate, channel width/depth ratio and streambank condition associated with the public use of developed and undeveloped areas near anadromous streams.

Developed Boat Ramps

Use of boat ramps can cause fish disturbance by people and gear entering, leaving, and floating on the water, and the potential for transient turbidity or release of harmful materials into the water. Maintenance of ramps and associated facilities can reduce overall impacts on riparian areas by controlling access and reducing the potential for silt or other impurities that might enter the water. These activities have the potential to degrade water quality due to sediment inputs and chemical contamination.

Non-Riparian Rock Quarries

Rock quarry operation and hauling can result in sediment delivery to streams. Activities associated with non-riparian rock quarries have the potential to cause short-term degradation of water quality and habitat substrate due to sediment inputs.

Infrastructure Maintenance

Adverse effects may result from the access provided for people to aquatic habitats, from the potential for periodic short-term degradation in water quality, and potential decreases in vegetation. Beneficial effects occur when maintenance reduces the potential for water quality degradation and improves the control of human access to waters and riparian areas. These activities may cause short-term degradation of water quality due to sediment inputs, and have the potential to degrade riparian reserves and impact water quality by chemical contamination. Infrastructure maintenance activities also have the potential to restore water quality by reducing chemical contaminant and sediment inputs to streams in the long-term. These activities also may potentially restore habitat substrate, streambank condition and riparian reserves.

Ski Area Operations

Ski area operations and maintenance have the potential for sediment delivery to streams from sanding and blowing operations, and run-off from parking lots. Activities associated with ski area operation may degrade water quality and habitat substrate by the introduction of sediment into streams. These activities may also potentially degrade water and pool quality.

Recreating on Surface Waters

Recreating on surface waters can result in disturbance of fish. These activities will maintain current habitat conditions for all habitat indicators.

Because of the potentially large number and wide geographic range of the activities covered in this Opinion, a continuing accounting or tracking of the overall watershed effects associated with these programmatic activities is important. As part of the subsequent Level 1 team review of programmatic actions, the USFS and BLM will report the number of actions within each category at the 5^{th} field watershed level. This will assist the Level 1 team in monitoring trends in the number and location of certain activities and their impacts on the environmental baseline. The net effects of these activities will be added to the environmental baseline for each 5^{th} field watershed and will be taken into account in subsequent consultations for any projects in these areas. An annual total of the number of projects covered by this Opinion will also be provided at the 4^{th} field watershed level to allow monitoring of trends across the entire ESU.

B. Cumulative Effects

Cumulative effects are defined as "those effects of future State or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation" (50 CFR § 402.02). For the purposes of this consultation, the action area includes those portions of the three administrative units within the subject ESU, additional Federal lands upstream of the ESUs in the Cowlitz River basin, and river reaches downstream of the administrative unit boundaries that may be affected by Federal land management activities.

Within the LCR steelhead ESU, Federal lands comprise approximately 47 percent of the area. A substantial portion of spawning and rearing habitat for LCR steelhead occurs on USFS and BLM lands. Gradual improvements in habitat conditions for salmonids are expected on these lands as a result of Northwest Forest Plan implementation.

The dominant land-use activities on non-Federal lands within the Clackamas River watershed (approximately 26%) are forestry and agriculture (METRO 1997). A small, but increasing, proportion of this non-Federal land is being used for urban growth. Historically, agriculture, livestock grazing, forestry and other activities on non-Federal land have contributed substantially to temperature and sediment problems in the ESU. Conditions on, and activities within, non-Federal riparian areas along stream reaches downstream of the USFS and BLM land presently influence river temperatures and contribute sediment to the habitat of LCR steelhead.

Significant improvements in LCR steelhead production outside of USFS and BLM land is unlikely without changes in forestry, agricultural, and other practices occurring within non-Federal riparian areas. NMFS is aware that significant efforts, such as Oregon’s Coastal Salmon Restoration Initiative and Washington’s Wild Salmonid Policy, have been developed to improve conservation of at-risk salmonid populations (including LCR steelhead) on non-Federal land. NMFS is also aware that

Oregon is working on a steelhead restoration plan and Washington is developing the Lower Columbia Steelhead Conservation Initiative. NMFS is not aware of any general changes to existing State and private activities within the action area that would cause greater impacts than presently occur to any of the salmonid species considered in this consultation.

Until improvements in non-Federal land management practices are actually implemented, the NMFS assumes that future private and State actions will continue at similar intensities as in recent years. Now that the LCR steelhead ESU is listed under the ESA, the NMFS assumes that non-Federal land owners in those areas will also take steps to curtail or avoid land management practices that would result in the take of those species. Such actions may be prohibited by Section 9 of the ESA, and subject to the incidental take permitting process under Section 10 of the ESA. Future Federal actions, including the ongoing operation of hydropower projects, hatcheries, fisheries, and land management activities will be reviewed through separate Section 7 processes. In addition, non-Federal actions that require authorization under Section 10 of the ESA would be considered in the environmental baseline for future Section 7 consultations.

Conclusion

The NMFS has determined, based on the information and analysis described in this Opinion and attachments, that implementation of the programmatic activities as proposed is not likely to jeopardize the continued existence of LCR steelhead, LCR chinook salmon, UWR chinook salmon, CR chum salmon, SW/CR cutthroat trout, and SW/LCR coho salmon. These actions are also not expected to result in the adverse modification of proposed critical habitat for the LCR steelhead, LCR chinook, UWR chinook, and CR chum salmon ESUs.

Basis for Determinations

1. The proposed programmatic USFS and BLM land management actions have been determined to be consistent with the Northwest Forest Plan ACS objectives (as documented in the BA amendments dated July 22 and August 3, 1998). These actions have also been determined to be consistent with the terms and conditions of the LRMP/RMP Opinion for LCR steelhead.

2. Some of the actions described in this Opinion will result in long-term improvement of habitat conditions for LCR steelhead. Degradation of habitat conditions, where applicable, is expected to be short-term in duration and of limited geographic scope.

3. Because some programmatic land management actions may result in more than a negligible likelihood of incidental take, NMFS has developed a set of standardized set of reasonable and prudent measures and associated terms and conditions to minimize the likelihood of incidental take.

4. Level 1 teams may review individual proposed actions to determine if action-specific circumstances would necessitate additional measures, through reinitiation, to avoid or minimize adverse effects beyond those listed in the ITS of this Opinion.

5. The USFS and BLM will provide the Level 1 teams with reports of the total number and net effects of actions in each category by 5^{th} field watershed to update the environmental baseline. The Level 1 teams will monitor trends in the number and location of individual actions and assess overall watershed impacts to the environmental baseline associated with these on-going actions.

6. The Level 1 teams (an Oregon team and a Washington team) will meet, as needed, to review the reports. If during the review, it is decided that impacts are greater than anticipated, this consultation will be reinitiated to address the impacts (e.g., require Level 1 team review of all actions prior to implementation or addition of more terms and conditions).

In reaching these conclusions, NMFS has utilized the best scientific and commercial data available as documented herein and by the BA and documents incorporated by reference.
Based upon the BA and Level-1 team review, NMFS concurs that the proposed programmatic actions are consistent with the NFP and its associated components (i.e., the ACS objectives, standards and guidelines, watershed analysis, watershed restoration, and land allocations).

Project type analyses indicate that any adverse impacts from the proposed programmatic actions are expected to be of limited extent and duration. The NMFS finds that temporary adverse effects to LCR steelhead, LCR chinook, UWR chinook, CR chum, SW/CR cutthroat trout, and SW/LCR coho salmon and their habitat may occur with the proposed programmatic actions. However, in each case, these adverse impacts will not retard nor prevent attainment of properly functioning habitat indicators important to these species at the project scale nor result in an inability for recovery of the species. At the watershed scale, the net effect of the proposed programmatic actions maintains and restores watershed habitat indicators and ecological processes that define the biological requirements of the species.

Therefore, NMFS concludes that when the effects of these proposed programmatic actions are added to the environmental baseline and cumulative effects occurring in the relevant action areas, they are not likely to jeopardize the continued existence of LCR steelhead, LCR chinook, UWR chinook, CR chum, SW/CR cutthroat trout, and SW/LCR coho salmon. In addition, NMFS concludes that the proposed programmatic actions will not result in the destruction or adverse modification of proposed critical habitat for LCR steelhead, LCR chinook, UWR chinook, and CR chum salmon ESUs.

Reinitiation of Consultation

Reinitiation of this conference is required if: (1) new information reveals that effects of the proposed action may affect listed species in a way not previously considered; (2) the action is modified in a way

that causes an effect on listed species that was not previously considered; or (3) a new species is listed or critical habitat is designated that may be affected by the action
(50 CFR § 402.16).

Incidental Take Statement

Sections 4(d) and 9 of the ESA prohibit any taking (harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in any such conduct) of listed species without a specific permit or exemption. Harm is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patters such as breeding, feeding, and sheltering. Harass is defined as actions that create the likelihood of injuring listed species to such an extent as to significantly alter normal behavior patterns which include, but are not limited to, breeding, feeding, and sheltering. Incidental take is take of listed animal species that results from, but is not the purpose of, the Federal agency or the applicant carrying out an otherwise lawful activity. Under the terms of Section 7(b)(4) and Section 7(o)(2), taking that is incidental to, and not intended as part of, the agency action is not considered prohibited taking provided that such taking is in compliance with the terms and conditions of this incidental take statement.

An incidental take statement (ITS) specifies the impact of any incidental taking of endangered or threatened species. It also provides reasonable and prudent measures that are necessary to minimize impacts and sets forth terms and conditions with which the action agency must comply in order to implement the reasonable and prudent measures. An ITS does not apply to candidate or proposed species. While effects on SW/LCR coho salmon and SW/CR sea-run cutthroat trout were considered in this Opinion, the reasonable & prudent measures and terms and conditions set forth in this ITS do not apply to SW/LCR coho salmon and SW/CR sea-run cutthroat trout. Should either of these species become listed in the future, this ITS would become effective for these species upon adoption of this conference opinion as a biological opinion.

The measures described below are non-discretionary. They must be implemented by the action agencies so that they become binding conditions necessary in order for the exemption in Section 7(o)(2) to apply. The administrative unit (USFS and BLM) has a continuing duty to regulate the activity covered in this incidental take statement. If the administrative unit (1) fails to adhere to the terms and conditions of the incidental take statement, and/or (2) fails to retain the oversight to ensure compliance with these terms and conditions, the protective coverage of Section 7(o)(2) may lapse.

Amount or Extent of the Take

Notwithstanding the NMFS' conclusion that the subject programmatic activities are not expected to jeopardize the continued existence of LCR steelhead, LCR chinook salmon, UWR chinook salmon, or CR chum salmon, there may be short-term impacts and NMFS anticipates that there could more than a negligible likelihood of incidental take of these species from some of the actions. Even though NMFS expects incidental take to occur due to the actions covered by this Opinion, the best scientific and commercial data available are not sufficient to enable NMFS to estimate a specific amount of incidental take to the species itself. In instances such as these, the NMFS designates the expected level of take as "unquantifiable."

This Incidental Take Statement is effective for one year from the date of its issuance. At that time, the NMFS will evaluate the effectiveness of the review and tracking requirements. The USFS and BLM will need to reinitiate this consultation to obtain additional incidental take authorization for the programmatic actions addressed in this Opinion.

Reasonable and Prudent Measures

The NMFS believes that the following reasonable and prudent measure is necessary and appropriate to minimize the likelihood of incidental take of the four listed species covered by this Opinion.

The USFS and BLM shall ensure that all actions determined to fall under this Opinion follow design criteria (listed in the terms and conditions section) established by Level 1 teams to minimize impacts.

Terms and Conditions

To minimize the likelihood of incidental take of listed salmonid species which may result from the proposed programmatic actions, the USFS and BLM shall implement the following terms and conditions for the projects covered in this Opinion. The individual projects covered by this Opinion must also comply with the terms and conditions of all required state, federal, and local permits.

<u>Road Maintenance</u>

- Dispose waste in stable sites only.
- Do not dispose waste on active floodplains (approximately 100 feet from the stream channel).
- Leave vegetation in ditches, when possible.
- Where sediment risks warrant, use filter strips (straw bales, or similar, if vegetation strips are not available) – do not create additional diversion potential.
- Maximize maintenance activities during the dry season to avoid wet periods.
- Clean ditches of slide materials.
- Follow the Oregon Department of Fish and Wildlife (ODFW) Guidelines for Timing of In-Water Work, except where the potential for greater damage to water quality and fish habitat exists if the emergency road maintenance is not performed as soon as possible.
- Follow the Washington Department of Fish and Wildlife (WDFW) guidelines for the timing of in-water work, as specified in the project Hydraulic Project Approval (HPA), except where the potential for greater damage to water quality and fish habitat exists if the emergency road maintenance is not performed as soon as possible.

<u>Aquatic Habitat Projects</u>

- Follow ODFW Guidelines for Timing of In-Water Work.

- Stabilize potential erosion areas.
- Minimize the number of access points through the riparian areas.
- Minimize time in which heavy equipment is in the stream channel.
- Include an approved spill containment plan.
- Control sedimentation.
- No conifers should be felled in the riparian area unless conifers are fully stocked.
- Follow WDFW guidelines for timing of in-water work, as specified in the project HPA.

Trail Maintenance and Construction
- Follow ODFW Guidelines for Timing of In-Water Work.
- Follow WDFW guidelines for timing of in-water work, as specified in the project HPA.
- Do not remove down wood from site (except to clear trail).

Repair of Storm Damaged Roads
- Dispose waste in stable sites only.
- Do not dispose waste on active floodplains (approximately 100 feet from the stream channel).
- Maximize activities during the dry season to avoid wet periods.
- When culverts are replaced, design outlets to minimize erosion.
- Follow ODFW Guidelines for Timing of In-Water Work.
- Follow WDFW guidelines for timing of in-water work, as specified in the project HPA.

Road Decommissioning and Obliteration
- Dispose waste in stable sites or within existing road prism only.
- Do not dispose fill on floodplain except to restore natural contour of roadbed.
- Leave vegetation in ditches, when possible.
- Maximize activities during the dry season.
- Ensure culvert removal restores natural drainage pattern.
- Stabilize potential erosion areas.
- Follow ODFW Guidelines for Timing of In-Water Work.
- Follow WDFW guidelines for timing of in-water work, as specified in the project HPA.

Nearstream and Instream Surveys
- Minimize amount of disturbance/stress to fish.
- Avoid walking on fish redds.
- For cultural resource test pits, locate excavated material away from streambank. Replace all material back into pits when survey is complete.

Environmental Education with Instream Activities
- Use a number of streams for trips and adjust use to minimize impacts on any one stream.
- Minimize disturbance to spawning fish while viewing them.

Pump Chances

- A fish biologist shall evaluate each one to determine (1) any need for fish screens and passage, and (2) effects on flows and downstream habitat.

Public Use of Developed Sites and Dispersed Public Use
- Limit activities harming riparian vegetation, and fish or their habitat.
- Implement a rehabilitation program where needed.

Developed Boat Ramps
- Manage and maintain ramps and associated areas to limit impacts on vegetation, water quality (including petroleum products), and sediment production.

Non-Riparian Rock Quarries
- Develop and implement an approved site management plan.
- Maintain all road accesses adequately, with seasonal stipulations, if appropriate.
- Minimize sediment to the degree practical and employ sediment control measures where appropriate.

Infrastructure Maintenance
- Manage human activities to reduce impacts on stream or riparian areas.
- Restore riparian vegetation to the degree possible.
- Where chronic problems (e.g. erosion, water quality, or disturbance) exist in key habitat areas, consider relocation and rehabilitation of the site.

Ski Area Operations
- Minimize sediment delivery to streams by following erosion control plans.

Recreating on Surface Waters
- Apply resource protection clauses to special use permits, as appropriate.
- Avoid put-in and take-out areas where spawning is occurring.

Reporting Requirement
- The Forest Service and Bureau of Land Management will maintain the attached reporting form.
- The USFS and BLM shall present the results of the reporting, summarized by fifth field watershed, to the Level-1 team within one year of issuance of this ITS.

Questions regarding consultation on these actions should be directed to Michelle Day, of my staff, at (503) 231-6938.

Sincerely,

Rick Applegate for

William Stelle, Jr.
Regional Administrator

ATTACHMENT 1

Report Form: Documentation of Project Consistency with the Lower Columbia River Steelhead Programmatic BA

References

Section 7(a)(2) of the ESA requires biological opinions to be based on "the best scientific and commercial data available." This section identifies the sources of data, information and references used in developing this Conference in addition to that submitted by the USFS and BLM.

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